ABSTRACT

PHYSICAL CHARACTERIZATION AND DISSOLUTION RATE OF ANDROGRAPHOLIDE-CARBOXYMETHYL CHITOSAN SOLID DISPERSIONS WITH DIFFERENT CARBOXYMETHYL CHITOSAN CONCENTRATION

(Prepared by Solubilitation and Spray Dryng Method)

Minnati Mawaddah Nafiis

Andrographolide is a diterpene lactone present in *Andrographis paniculata*, has a wide pharmacological activities, including analgesic, antipyretic, anti-inflammatory, hepatoprotective effect, antiviral, and anti thrombotic. Andrographolide has a low aqueous solubility and low bioavailability after oral administration. Solid dispersions of andrographolide using carboxymethyl chitosan carriers increased solubility and dissolution rate of andrographolide. Andrographolide-carboxymetyl chitosan solid dispersions prepared by solubilitation and spray drying method. The objective of this research was studying the effects of carboxymethyl chitosan concentration on physical characteristics and dissolution rate of andrographolide-carboxymethyl chitosan solid dispersions. Characterization of solid dispersions was done using Scanning Electron Microscopy (SEM), Differential Thermal Analysis (DTA), Fourrier Transform Infrared Spectrometer (FTIR), and X-Ray Diffracton. The SEM result showed that increased carboximethyl chitosan concentration will decrease the number of andrographolide crystal. DTA thermogram of solid dispersions showed a decreased in the melting point temperature and X-Ray Diffraction showed decreased crystallinity of andrographolide. Solid dispersions of andrographolide-carboxymethyl chitosan with ratio 1:5 (F5) has found to have the highest solubility, dissolution efficiency and dissolution rate.

Keywords: andrographolide, carboxymethyl chitosan, solid dispersions, characterization, dissolution